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[54] **ORAL ADMINISTRATION OF A PILL, TABLET OR CAPSULE**
2 Claims, 2 Drawing Figs.

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A61j 7/00, A61k 9/04

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 21, 31—39; 99/138, 134, 23; 128/222; 206/42, 46
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ABSTRACT: The oral administration of a pill, tablet or capsule intended to be swallowed whole with the assistance of water or other liquid to wash it down is improved by utilizing a medicinal capsular product comprising a pill, tablet, capsule or other swallowable unit surrounded by a frangible sac containing sufficient water or other liquid to substantially assist in the swallowing of said unit, said sac being substantially impervious to said liquid and being adapted to be swallowed after rupture, and said unit comprising a medicinal interior and a casing for said interior that is essentially insoluble in said liquid.

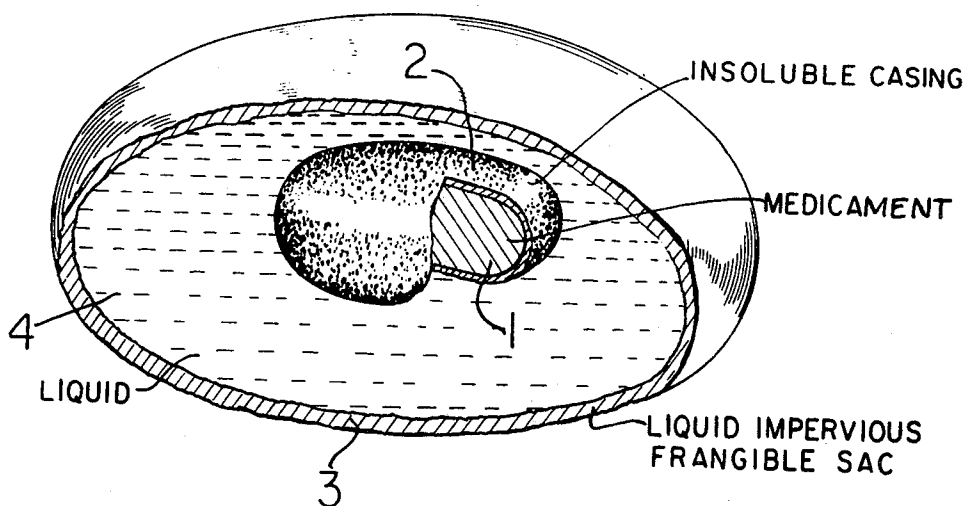


FIG. 1

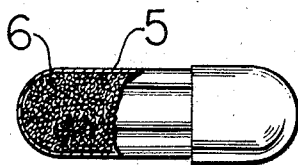
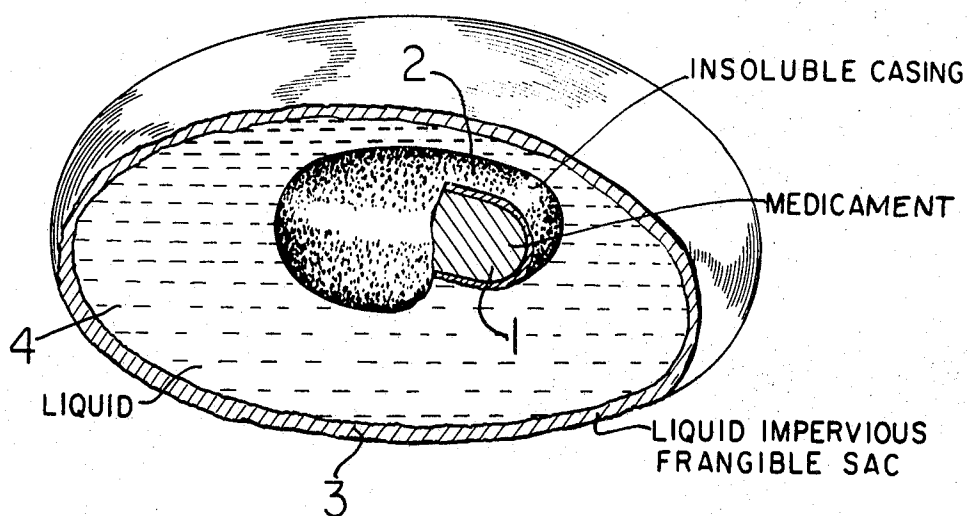


FIG. 2

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ORAL ADMINISTRATION OF A PILL, TABLET OR CAPSULE

BACKGROUND OF THE INVENTION

Most individuals experience difficulty when attempting to swallow a pill, tablet, capsule or other medicinal unit in solid form without the assistance of water or some other liquid to wash it down. However, a source of water or other liquid often is not conveniently available or even available at all. This is the case, for example, when driving an automobile late at night. Moreover, in many foreign countries water of sufficient purity to be swallowed cannot be relied upon. If the need arises under such circumstances for the oral administration of some medicament in the form of a pill, tablet or capsule that has to be swallowed whole, the absence of any water or other liquid makes such administration impossible or unpleasant.

By way of illustration, if one becomes afflicted with a severe headache when driving an automobile late at night and wishes to obtain relief by taking one or two aspirin tablets many people find it impossible or, in any event, very unpleasant to attempt to dissolve the aspirin tablets in the mouth with release of the strongly acrid acetylsalicylic acid comprised in the tablet. By way of further example, a medicament such as an antibiotic ordinarily is dispensed in tablet form or in capsule form and the physician's prescription usually requires its administration at approximately stated intervals. This presents a serious problem if one is faced with the necessity for attempting to swallow the tablet or capsule without the aid of water or other liquid.

SUMMARY OF THE INVENTION

It is an object of this invention to provide a medicament comprising a unit such as pill, tablet or capsule the oral administration of which is facilitated without the aid of an outside source of water or other liquid.

According to this invention and for the purposes aforesaid, a nontoxic, orally administrable medicinal capsular product is provided which comprises a pill, tablet, capsule or other medicinal unit to be swallowed whole surrounded by a frangible sac containing sufficient water or other liquid to substantially assist in the swallowing of the unit, the sac being substantially impervious to the liquid and the unit comprising a medicinal interior and a casing that is essentially insoluble in the liquid within the sac. The frangible sac may be of any convenient size so long as it contains sufficient water or other liquid to assist substantially in swallowing the pill, tablet or capsule. On the other hand, the size of the sac should be consistent with packaging the capsular product in containers that can be conveniently sold and carried. A capsular product whose size is of the order of a large olive contains sufficient water to assist substantially in swallowing a conventional tablet or capsule and may be readily packaged for over-the-counter sales.

Whenever the need arises for oral administration, the capsular product is merely placed in the mouth and the sac is ruptured with the teeth to release the water or other liquid. As soon as the water or other liquid is released it is swallowed along with the pill, tablet or capsule and along with the sac. By making the sac of soft, flexible material it may be readily swallowed and when a nontoxic material such as gelatine is used it merely disintegrates in the stomach or intestine. Alternatively, the sac may be composed of an edible frangible material that is rigid and that is easily broken up in the mouth into pieces that either can be easily swallowed or become dissolved in saliva.

When the unit to be swallowed whole is in the form of a tablet or pill, the tablet or pill is provided with a coating that is insoluble in the surrounding water or other liquid within the sac. However, the coating should be one which disintegrates when taken internally either in the stomach or in the intestine according to the nature of the medicament which is the subject of the oral administration. In such case a medicinal unit adapted to be swallowed is provided which has a solid

medicinal interior that is surrounded by a casing that is insoluble in the water or other liquid within the sac. The so-constituted coherent body to be swallowed may take other forms such as a conventional capsule which has a hard exterior or which may even be a small conventional capsule of the soft and flexible type which serves as a container for some powder or liquid which comprises the desired medicament. The wall of the capsule in such case provides the insoluble casing for the medicament contained therein.

BRIEF DESCRIPTION OF THE DRAWING

Further objects, advantages and features of this invention will become apparent in connection with the following description of certain illustrative embodiments of the practice of the invention, wherein:

FIG. 1 is a perspective view on an enlarged scale of a medicinal capsular product embodying this invention, portions being broken away to show the constituent elements; and

FIG. 2 is a side elevation of a conventional capsule, with a portion thereof broken away to show the interior, which capsule may be used within the liquid-containing sac instead of the coated tablet shown in FIG. 1.

DETAILED DESCRIPTION

The practice of this invention may be illustrated in connection with aspirin comprised in the swallowable tablet and the use of water to assist in swallowing the tablet. The conventional aspirin tablet containing a normal dosage is a disc-shaped tablet measuring about 1 cm. across and about .4 to .5 cm. in thickness. According to this example of the practice of this invention, a conventional aspirin tablet 1, such as that just described, is encased with a gelatine coating 2. While gelatine is soluble in hot water to provide a coating solution, it is insoluble in water at ambient temperatures. However, after swallowing, it disintegrates to release the encased medicament. The water-insolubility of the gelatine coating may be enhanced by one or more outer coatings of arsenic-free shellac. If three or more outer coatings of shellac are provided, an enteric coating may be provided in that it acquires the property of resisting solution in the stomach for a period of time sufficiently long to permit entry of the tablet into the intestinal tract wherein, under this different environment, disintegration of the coating occurs. For some treatments an aspirin tablet having an enteric coating is prescribed. The production of coated tablets and pills, including pills having an enteric coating, as such, is well known in the art.

The sac 3 which surrounds the pill or tablet is of the soft elastic type and is frangible. Its size is governed by the amount of liquid 4, in this case water, to be encased therein for the purpose of aiding the swallowing of the pill or tablet. The size of the sac also is selected in relation to that which can be conveniently packaged and sold. While there is considerable latitude in this regard, a sac adapted to contain about 8 cc. of water is typical, namely, a sac which, as regards size, may be compared roughly with that of a large olive. Usually a suitable liquid content ranges between about 6 cc. and about 10 cc.

Soft frangible elastic capsules as such and their production are well known. The sac or shell is made of gelatine with sufficient glycerin, sorbitol or other plasticizing material to retain permanent flexibility. A blend of approximately equal parts of glycerin and gelatine, with or without about 5 percent of acacia, is suitable.

The water and the pill or tablet may be introduced into the sac in any desired manner. Known machines of the rotary die type or of the moving die type are especially suitable. When using such machines, two continuous gelatine ribbons are fed into convergence between moving dies and injecting means injects that which is to be placed within the gelatine sac. The machine also cuts out and seals the filled and formed capsules. When practicing the present invention according to the present example, each capsule that is formed is filled with a predetermined measured quantity of water in conjunction

with one pill or tablet. Alternatively, the sac may be produced in empty condition, as by the dipping technique, so as to have an elongated end adapted to be cut off to permit insertion by hand of the pill or tablet and the water. After filling is completed the filling aperture is sealed with hot gelatine solution which, preferably, is a solution of the gelation corresponding with that of the sac.

By way of further exemplification, the unit comprising a medicinal interior surrounded by a water-insoluble casing may be in the form of a capsule, ordinarily a small capsule, such as that illustrated in FIG. 2 which comprises the conventional two-part casing 5 and the medicinal material 6 which may be a predetermined dosage of an antibiotic dispersed in a suitable medium. A capsule having a conventional hard gelatine casing may be used and, if desired, in order to further increase the water-insolubility of the hard gelatine casing, or in order to impart enteric characteristics, the capsule may be provided with one or more external coatings of arsenic-free shellac. The frangible flexible water-containing sac may be as heretofore described in connection with the preceding example.

The employment of water to assist in swallowing the medicinal unit ordinarily is preferable because water is tasteless, its use for this purpose is familiar to the user, and it is inexpensive. Of course, the water should be pure water but only in the sense of not containing anything that is harmful when swallowed. Thus water may have nontoxic substances dissolved therein such as a sweetening or flavoring material or color. Moreover, it would be in accordance with this invention to dissolve in the water some substance having medicinal value, e.g. an antacid, as a supplement for the medicament contained in the interior of the unit that is swallowed whole.

While aqueous liquids ordinarily are preferred to assist in swallowing the medicinal unit, some other liquid may be used such as a mineral oil, preferably one that is tasteless and is freely fluid. A mineral oil may be especially appropriate in the case of a pill or tablet wherein the medicament is a laxative, for example, cascara. Vegetable oil also could be used. In such case the casing for the unit to be swallowed whole is insoluble in the mineral oil or other nonaqueous liquid and the surrounding sac is impervious to the liquid.

While it is preferable to employ a frangible sac which is sufficiently soft and flexible to collapse when ruptured and which is easy to swallow because of its soft flexible properties, one also may employ a casing that is more stiff but that is easily broken and readily disintegrates in the mouth and may be easily swallowed either in small pieces or when dissolved in saliva. For example, chocolate confections are commonly made with a liquid interior that is flavored in one way or another, e.g. a

liqueur or some syrup. The side wall of the chocolate sac is rendered essentially impervious to the encased liquid by known expedients such as incorporation of insoluble waxy materials. If such a product is made so as to be somewhat larger than the usual size for a confection and if a pill, tablet, capsule or other medicinal unit is placed inside along with the liquid, the product is suitable for use in the practice of this invention. Conventional means for providing a liquid filled confection may be employed.

It is apparent that any medicament other than aspirin, an antibiotic or a laxative may be used. Thus other medicaments which may be mentioned as illustrating the utility and convenience incident to the practice of this invention are pep pills for late night driving, vitamins, birth control pills, atebirin, and quinine. This invention is of especial utility in the case of individuals subject to emergency treatment such as individuals suffering from a heart disease which requires prompt oral administration of a medicament, for example, nitroglycerin.

I claim:

1. In the method of swallowing a pill, tablet or capsule together with water or some other liquid to wash it down, the improvement which consists in the steps of:

A. placing in the mouth whole a nontoxic, orally administrable capsular product which comprises:

1. a medicinal unit adapted to be swallowed whole, which unit comprises:

a. a medicinal pill, tablet or capsule interior intended to be swallowed whole with the assistance of an effective amount of water or other liquid; and

b. a casing or coating surrounding said interior;

2. an edible frangible sac surrounding said encased or coated unit and adapted to be readily ruptured in the mouth; and

3. not less than a quantity of liquid within said sac in effective amount to assist substantially in the swallowing whole of said unit upon the rupture of said sac within the mouth and release of the liquid contained therein; and said casing or coating being substantially insoluble in said liquid, and said sac being substantially impervious to said liquid and being adapted to be swallowed after rupture with the assistance of liquid released therefrom.

B. rupturing said sac within the mouth; and

C. swallowing the medicinal unit after rupture of said sac with the assistance of the liquid released therefrom.

2. A method according to claim 1 wherein said sac is a soft gelatine sac.